



## CURRICULUM VITAE (CVA)

**IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.**

|   |                     |                |            |
|---|---------------------|----------------|------------|
| <b>Part A. PERSONAL INFORMATION</b>         |                     | <b>CV date</b> | 09/05/2023 |
| First name                                  | Elvira              |                |            |
| Family name                                 | Gómez Valentín      |                |            |
| Gender (*)                                  | Female              |                |            |
| e-mail                                      | e.gomez@ub.edu      | URL Web        |            |
| Open Research and Contributor ID (ORCID)(*) | 0000-0002-9223-6357 |                |            |

(\*) Mandatory

### A.1. Current position

|                    |  |                |  |
|--------------------|--|----------------|--|
| Position           | Profesora Catedrática de Universidad                                 |                |  |
| Initial date       | 13/06/2019   |                |  |
| Institution        | Universidad de Barcelona   |                |  |
| Departament/Center | <a href="#">Ciència dels Materials i Química Física</a>              |                |  |
| Country            | Spain  | Teleph. number |  |
| Key words          | Electrochemistry, micro-nanostructures, electrodeposition, catalysis |                |  |

### A.3. Education

| PhD, Licensed, Graduate      | University/Country | Year |
|------------------------------|--------------------|------|
| Bachelor Degree in Chemistry | Barcelona/Spain    | 1978 |
| PhD in Chemistry             | Barcelona/Spain    | 1983 |

### Part B. CV SUMMARY (max. 5000 characters, including spaces)

Received Ph D (1983) in the field of chemical kinetics using stop-flow techniques, my research activity was focused on the electrochemistry field. The research work that I have developed is framed, for the most part, within the study and design of electrodeposition processes and characterization of new materials with high added value and applicable in microelectromechanical devices, sensors, actuators, energy, biomedicine and recently, photocatalysis and synthesis.

Firstly, my research was addressed to the fundamental study of the electrodeposition processes of metals and alloys, analyzing the nucleation and growth mechanism, to control their properties adequate for their subsequent application. Initially, the work was carried out mainly in aqueous media, preparing and characterizing structures of Co/Ni-based magnetic alloys, applicable both for magnetic devices and for electrocatalysts in fuel cells. In collaboration with the Micro and Nanotools group of the IMB-CSIC, magnetic sheets and microstructures were electrodeposited in prototypes of microvalves and digital flow regulators. Magnetic materials were also developed on silicon-based substrates, in collaboration with the Polytechnic of Milano (HI2008-0058). The experience gained allowed to participate in a Consolider-Ingenio project (Nanotechnology in Biomedicine (CSD2006-00012) in which 2D coils were designed and manufactured electrochemically for the detection of functionalizable magnetic particles. Progressively, our research work was oriented to the field of Nanoscience and Nanotechnology, since the miniaturization of metals and alloys was a challenge in which electrochemical techniques have proven to be able to contribute successfully, allowing the synthesis of thin sheets, composites, multilayers, nanowires or nanoparticles. Using hard

templates, we have been able to synthesize from micrometric-sized structures on photolithographed substrates, to nanoparticles of modulable size and composition, and nanowires, using porous membranes.

In the last ten years, our interest has also focused on proposing innovative strategies for the preparation of new micro-nanostructures, incorporating creative reaction media such as microemulsions, ionic liquids and, recently, block copolymers as soft templates. Well-ordered mesoporous nanostructures with exquisitely defined geometry, controlled surface chemistry, and tunable physical properties intended for use as catalysts in reactions, effective photocatalysts in the water decontamination or dispensers of drugs, focusing interest in their activity and durability. These multidisciplinary projects have been carried out in collaboration with groups of different expertise, projects in which we have contributed with our know-how in the electrochemical preparation of materials, their morphological, compositional and structural characterization, and the kinetic monitoring of the chemical reactions involved. For the new applications, some circular processes have been designed to achieve sustainability.

## Part C. RELEVANT MERITS (sorted by typology)

### C.1. Publications

**All publications included in this section are peer-reviewed and correspond to journals well-positioned).**

1.- Title: Electrodeposition manganese oxides as efficient photocatalyst for the degradation of tetracycline antibiotics pollutant. .

Authors: Cestaro, R.; Philippe, L.; Serrà, A.; Gómez, E.; Schmutz, P.

**Chemical Engineering Journal**, 462 (2023) 142202. DOI: 10.1016/j.cej.2023.142202

2.- Title: Visible-light driven sonophotocatalytic removal of tetracycline using Ca-doped ZnO nanoparticles.

Authors: Bembibre, A.; Majdi, B.; Hjiri, M.; Gómez, E.; Hatem, R.; Dhahri, R.; Serrà, A.

**Chemical Engineering Journal**. 427 (2022) 132006. DOI: 10.1016/j.cej.2021.132006

3.- Title: Electrodeposition of nanostructured Bi<sub>2</sub>MoO<sub>6</sub>@Bi<sub>2</sub>MoO<sub>6</sub>-x homojunction films for the enhanced visible-light-driven photocatalytic degradation of antibiotics.

Authors: Gómez, E.; Cestaro, R.; Philippe, L.; Serrà, A.

**Applied Catalysis B-Environmental**.317 (2022)121703.DOI: 10.1016/j.apcatb.2022.121703

4.- Title Electrodeposition of nanostructured cobalt films from a deep eutectic solvent: Influence of the substrate and deposition potential range.

Authors: Landa-Castro, M; Sebastián, P.; Giannotti, M.I.; Serrà, A.; Gómez, E.

**Electrochimica Acta**, 359(2020)136928-1-12. DOI: 10.1016/j.electacta.2020.136928

5.- Title Recycled cyanobacteria ashes for sono-enhanced photo-Fenton wastewater decontamination.

Authors: Artal, R.; Philippe, L.; Gómez, E.; Serrà, A.

**Journal of Cleaner Production**, 267(2020)121881, DOI: 10.1016/j.jclepro.2020.121881

6.- Title Efficient magnetic hybrid ZnO-based photocatalysts for visible-light-driven removal of toxic cyanobacteria blooms and cyanotoxins

Authors: Serrà, A.; Pip, P.; Gómez, E.; Philippe L.

**Applied Catalysis B-Environmental** 268(2020)118745, DOI:10.1016/j.apcatb.2020.118745

7.- Title Circular zero-residue process using microalgae for efficient water decontamination, biofuel production, and carbon dioxide fixation

Authors: Serrà, A.; Artal, R.; García-Amorós, J.; Gómez, E.; Philippe L.

**Chemical Engineering Journal**, 388(2020)124278, DOI: 10.1016/j.cej.2020.124278

**8.- Title** Hybrid Ni@ZnO@ZnS-Microalgae for circular economy: A smart route to the efficient integration of solar photocatalytic water decontamination and bioethanol production.

Authors: Serrà, A.; Artal, R.; García-Amorós, J.; Sepúlveda, B.; Gómez, E.; Nogués, J.; Philippe L.

**Advanced Science** 6(2019)1902447, DOI: 10.1002/advs.201902447

**9.- Title** Highly active ZnO-based biomimetic fern-like microleaves for photocatalytic water decontamination using sunlight.

Authors: Serrà, A.; Zhang, Y.; Sepúlveda, B.; Gómez E.; Nogués, J.; Michler, J.; Philippe L.

**Applied Catalysis B-Environmental**, 248(2019)129-146, DOI: 10.1016/j.apcatb.2019.02.017

**10.- Title** Janus electrochemistry: asymmetric functionalization in one step

Authors: Ibañez D.; Vallés E.; Gómez E.; Colina A.; Heras A.

**ACS Applied Materials & Interfaces**, 9(2017)35404-35410, DOI: 10.1021/acsami.7b10073

## C.2. Congress

In the last 10 years, a total of **74** communications have been presented at conferences, 53 at international meetings and 21 at the national level.

## C.3. Research projects

**1.- Title of the project:** Aplicaciones medioambientales y energéticas de la Tecnología Electroquímica

Financing institution: Ministerio de Ciencia e Innovación (MICINN)

Number of the project: TED2021-129898B-C22

Amount: 150.621.25 € Duration, since: 01/12/2022 until: 30/11/2024

Researchers in charge: Elvira Gómez Valentín, Albert Serrà Ramos

**2.- Title of the project:** (Bio)funcionalización de chips en suspensiones innovadores para estudios químicos, bioelectrónicos y mecánicos en células vivas.

Financing institution: Ministerio de Ciencia, Innovación y Universidades

Number of the project: PID2020-115663GB-C32

Amount: 177265 € Duration, since: 01/09/2021 until: 31/08/2024

Researchers in charge: M. Luisa Pérez García; Elvira Gómez Valentín

**3.- Title of the project:** (Bio)funcionalización de Suspensiones de Micro- y Nanoherramientas Avanzadas para Aplicaciones Intra y Extracelulares.

Financing institution: Ministerio de Economía y Competitividad

Number of the project: TEC2017-85059-C3-2-R

Amount: 189.970 € Duration, since: 2018 until: 2020

Researchers in charge: M. Luisa Pérez García; Elvira Gómez Valentín

**4.- Title of the project:** Fusión de técnicas espectroelectroquímicas avanzadas.

Financing institution: Junta de Castilla y León

Number of the project: BU297P18

Amount: 120.000 € Duration, since: 2019 until: 2021

Researcher in charge: Aránzazu Heras Vidaurre

**5.- Title of the project:** Computational Materials Science Laboratory/ Laboratori de Ciència de Materials Computacional

Financing institution: Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR)

Number of the projects: 2017SGR13-2021 SGR 00079

Amount (overheads included): 65.896+60.000 € Duration, since: 2017 until: 2024

Researcher in charge: Francesc Illas Riera

**6.-Title of the project:** (Bio)funcionalización de Micro- y Nano-Herramientas en suspensión para aplicaciones en células vivas

Financing institution: Ministerio de Economía y Competitividad

Number of the project: TEC2014-51940-C2-2-R

Amount: 189.970 € Duration, since: 2015 until: 2017

Researcher/s in charge: M. Luisa Pérez García; Elisa Vallés Giménez

**7.- Title of the project:** Preparación en una sola etapa de membranas conducto-ras tipo Janus formadas por nanoestructuras metálicas sobre películas de nanotubos de carbono monocapa sin soporte físico

Financing institution: Ministerio de Economía y Competitividad

Number of the project: CTQ2014-61914-EXP

Amount: 60.000 € Duration, since: 2015 until: 2017

Researcher in charge: Aránzazu Heras Vidaurre

**8.- Title of the project:** Métodos electroquímicos para la preparación de materiales base CoPt con propiedades magnéticas y mecánicas modulables.

Financing institution: Ministerio de Ciencia e Innovación

Number of the project: CTQ2010-20726

Amount: 64.000 € Duration, since: 2011 until: 2013

Researcher in charge: Elisa Vallés Giménez, Elvira Gómez Valentín

#### **C.4. Contracts, technological or transfer merits**

**1.- Title of the contract:** Asesoramiento e investigación aplicada en el campo de la Electroquímica

Suport institution: Fundació Bosch i Gimpera de la Universitat de Barcelona

Number of the project: 370789

Amount): 13.913,39 Duration, since: 2020 until: open

Researcher/s in charge: **Elvira Gómez Valentín**

**2.- Title of the contract:** The metalizing, using ionic liquid solutions, of certain conductive or non-conductive surfaces

Financing Firm: SOPI - Solvay Specialty Polymers Italy S.p.A (2014-2015)

Amount (overheads included): 29.341,00

Researcher/s in charge: **Elvira Gómez Valentín**

**3.- Title of The contract:** Metallization using ionic liquids on surfaces slightly conductive

Financing Firm: SOPI - Solvay Specialty Polymers Italy S.p.A Country (2015-2016)

Amount (overheads included): 29.840,00

Researcher/s in charge: **Elvira Gómez Valentín**

From these projects one **patent** was developed:

**Inventors:** P. Cojocar, C. Monzani, M. Apostolo, F. Triulzi, V. Tortelli, E. Gómez Valentín, E. Vallés Giménez

Title: Compositions for electrodeposition of metals, electrodeposition process and product obtained: Priority Application

Number: EP 2014-382389 Priority Countries: ITALY / USA

Patent: No WO 2016055579 Kind A1 Date Apr14, 2016

Titular: SOPI - Solvay Specialty Polymers Italy S.p.A

**Extended countries:** EUROPE and USA